



CITY OF DURHAM | NORTH CAROLINA

Date: July 29, 2015

To: Thomas J. Bonfield - City Manager
Through: W. Bowman Ferguson - Deputy City Manager
From: Marvin G. Williams – Director of Public Works
Subject: Brine Ordinance Revisions (Section 62-16) – Additional Information

Executive Summary

At the July 23, 2012 Work Session Council Member Catotti inquired about the environmental impacts of using brine to prevent, reduce, or delay the accumulation of ice on City streets, sidewalks or other public ways as a result of a winter weather event. The North Carolina Department of Transportation has determined using brine in advance of a winter weather event uses less salt than using salt alone after the event. By using less salt, brine is more effective, saves money, and has less impact on the environment.

Chloride is the component of road salt and brine that would be most likely to result in a toxicity problem in nearby streams. The highest chloride levels measured were 116 and 115 mg/L, which are less than the North Carolina Water Quality Standard of 230 mg/L. Additional monitoring data is available in issues and analysis.

Recommendation

The Administration recommends that City Council approve an amendment to the Durham Code of Ordinances Section 62-16.

Background

The application of brine on City streets and sidewalks has been found to be an effective tool to prevent and delay the accumulation of snow and ice on City streets and sidewalks when applied properly before a winter weather event. The Durham Code of Ordinances Section 62-16 currently prohibits anyone from depositing brine and other substances on City streets and sidewalks. This amendment would allow City employees or agents to responsibly use brine or other deicing products within the City to mitigate the danger of accidents and injuries posed by the accumulation of ice on City streets and sidewalks as a result of a winter weather event.

Issues and Analysis

NCDOT has determined that treating roadways with brine in advance of winter weather events uses less salt overall than treating with rock salt during and after the event. Less salt on the roadway results in less salt being released into the environment.

Chloride is the component of road salt and brine most likely to result in a toxicity problem in nearby streams. Chloride is not included in the City's routine ambient stream water quality monitoring

program. The Public Works Water Quality Unit has monitored chloride intermittently in special studies that included South Ellerbe Creek, Third Fork Creek, and a tributary stream to Sandy Creek. The highest levels measured were 116 and 115 mg/L, which are less than the North Carolina Water Quality Standard of 230 mg/L. These measurements were taken in October of 2012 and January of 2011. Three-tenths of an inch of snow was recorded at the Raleigh-Durham International Airport (RDU) in January 2011. The October sample was taken during a storm event.

The Water Quality Unit also monitored chloride in two locations during a storm on January 30, 2013. The concentrations recorded during the storm were 78 mg/L in Third Fork Creek and 58 mg/L in the storm sewer off Englewood Avenue. These are significantly less than the stream standard of 230 mg/L, indicating a low risk for chloride toxicity. RDU recorded one inch of snow in January 2013.

<u>Location</u>	<u>Date</u>	<u>Chloride Concentration (mg/L)</u>
South Ellerbe Creek at Club Boulevard	10/15/2012	116 (during storm event)
Tributary to Sandy Creek at Ivy Creek Boulevard	01/25/2012	115.1
Third Fork Creek at Forest Hills Park	01/30/2013	77.9 (during storm event)
Storm Sewer at Englewood Avenue	01/30/2013	58.4 (during storm event)

The City also uses the following best management practices to minimize the amount of salt being released into the environment.

- Use the minimum amount of salt needed to get the job done.
- Salt is stored under cover to prevent a loss due to runoff.
- Contain wash water from trucks used for salting and sanding in a holding tank for disposal or discharge into sanitary sewers.
- Place salt piles in areas not subject to flooding.
- Contain stormwater runoff from areas where salt is stored by using buffers to diffuse runoff before entering waterbodies.